

both a fit and healthful employment for the boy or girl of low vitality who promises to become tubercular. Curiosity and love of color are often characteristics of a low grade of intelligence, and both can be advantageously used in guiding such in the cultivation of plants and small animals.

In the judgment of many, too much attention has been given to helping and prodding and coaxing the defectives, and not enough to properly directing the bright ones. It is not the slowcoach who is the menace to the commonwealth. It is the one who is educated to the point where he is ashamed of work, and has not been guided into any suitable occupation.

It is often the very bright pupil who has the idle time that leads into mischief, and whose easy time in school leaves him unfitted for the plodding which is a part of every vocation.

In New Orleans the schools have taken up the study of the exceptional child, and through his parents and without attracting his attention to the fact that he is being studied, trying to ascertain why he is strong, healthy and happy, and so create an ideal for which others will strive.

As this child is the *really normal* child, these studies will show the results and comparative value of heredity and environment, and the time and effort lost on dullards can be spent on these normal pupils.

MODIFICATIONS IN ADMINISTRATIVE MEASURES NECESSITATED BY THE CARRIER PROBLEM.*

By F. W. BROWNING, M. D., Health Officer, Hayward.

The "carrier" problem confronts us very seriously in California for the reason that as yet the State Board of Health has not promulgated any regulations for the guidance of the health officer. Criticism, however, is not called for because no practical solution of the problem has been found. It is brought before this body of health officers at this time in the hope that practical recommendations, even though of a temporary nature, may be offered for the consideration of the State Board of Health.

Rosenau makes the trite remark that "the relief of bacillus carriers is one of the rewardful problems in preventive medicine," whilst Albert of Iowa City, after reading a very excellent paper on the problem of the diphtheria "carrier" at the last meeting of the American Medical Association last June, which was freely discussed by eminent men, closes the discussion thus: "The number of methods that have been discussed emphasizes one of the conclusions that we made, viz: that no one method has as yet proved satisfactory for the proper treatment of the carrier condition."

Let us briefly consider the situation in California at this time in so far as it concerns *diphtheria*.

The ruling of the State Board of Health is that "release from quarantine for diphtheria must be based upon the determination of two consecutive negative cultures from the nose and throat, these

two cultures to be taken on separate days" (see Order dated January 8, 1910).

I also have a ruling from the President of the State Board of Health as follows: "All children in whose throats the Loeffler bacilli are found should be isolated." And again from the same authority: "Just so long as the Loeffler bacilli are found in a child's throat, that child should be quarantined." These rulings only deal with clinical cases of diphtheria and post-diphtheria carriers, whilst the vastly more numerous class of persistent "carriers" are allowed to roam at will, and because they are not in any way restricted they are unquestionably the more frequent source for the dissemination of diphtheria.

In some countries, Austria to wit, bacillus carriers are to be regarded exactly like persons ill of the contagious diseases, or like suspects. In Toronto, Canada, all diphtheria carriers are isolated and thus prevented from coming in contact with other children.

According to an investigation made by the Research Laboratory of Johns Hopkins Hospital there was an average of 3.61% of carriers among the 80,000 school children of Baltimore, whilst 3.48% was the average number of carriers among the general population of the city, which, with an estimated population of 600,000 would give 20,880 carriers in the city. This works out, according to the report, with an average of 20 carriers to every case of diphtheria.

Taking these figures as a standard the actual conditions in California are that the *one* case of diphtheria is quarantined, perhaps for six months or more (an actual experience in my own practice), and the *twenty* carriers are allowed to roam at large, each one a focus of more or less severity for the further dissemination of the disease. Yet according to the above standard it is not practical to isolate every carrier, for public opinion would not consent. It is, therefore, very essential that some reasonable plan should be devised, even if it is only a temporary one, to meet the present necessities.

Ledingham, in discussing the supervision of diphtheria carriers, says: "The difficulty arises in the case of carriers who have for long periods yielded cultures regarded as positive. In such cases it is advisable to prepare a pure culture, in order to make certain that the bacillus is properly classed as *B. diphtheria* and not one of the rarer forms of diphtheria which closely resemble *B. diphtheria* morphologically. If the bacillus after isolation proves culturally and biochemically indistinguishable from *B. diphtheria*, but completely nonvirulent, the question of the isolation of the carrier arises. If there is good reason for believing that only nonvirulent *B. diphtheria* are present, i. e., if the culture appears to contain only one form of *B. diphtheria*, then it may sometimes be necessary to relax the isolation in certain cases, but under no circumstances should such a child or person be allowed to return to school or to undertake the care of small children."

Would it not be reasonable for the State Board

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of Health to promulgate a temporary ruling in cases of long standing diphtheria carriers when cultures from the nose and throat, as demonstrated in the State Hygienic Laboratory, show a non-virulent type of bacillus, that isolation may be modified? The terms of the modification may be set by the state board or delegated to the secretary or the Director of the State Laboratory.

Last winter an effort was made in Hayward to follow the rulings of the state board in continuing quarantine until two consecutive negative cultures were obtained in all post-diphtheritic carriers and contacts. The result was that out of 14 families in which diphtheria developed absolute quarantine was maintained as follows:

Family of 4 persons was quarantined for 43 days.

Family of 8 persons was quarantined for 50 days.

Family of 3 persons was quarantined for 171 days and still positive.

Family of 3 persons was quarantined for 88 days.

Family of 10 persons was quarantined for 143 days.

Family of 9 persons was quarantined for 40 days.

Family of 4 persons was quarantined for 33 days.

Total, 41 persons quarantined for 568 days.

Thus one-half of the 14 families were quarantined on an average for 81 days each or nearly three months per family, and in every instance they were among the laboring classes.

It is not to be wondered at that the public chafe under such stringent measures, especially when it is known that other carriers whom the public have been led to believe are just as dangerous, are allowed perfect freedom.

The practical outcome of this present method is that the public hesitate to call in medical attention, and in consequence diphtheria will run rife before the health authorities are cognizant of its presence.

The importance of the carrier problem is illustrated by the results of an investigation carried on in Hayward in 1908. A brief report of this work is appended.

REPORT ON DIPHTHERIA CARRIERS IN HAYWARD GRAMMAR SCHOOL.

Owing to the presence of several cases of diphtheria distributed indiscriminately throughout the entire school district in the early part of 1908, permission was obtained from the school trustees to test out the entire school of 690 pupils. With the assistance of the State Hygienic Laboratory, which did the bacteriological work, swabs were taken from the nose and throat of half the scholars on February 10th and the other half on February 13th. The report from the laboratory showed 93 of the children as "carriers." These were at once sent home, together with their respective brothers and sisters, and were not allowed to return to school until they all showed two negative (consecutive) reports from the State Laboratory. During the next two months swabs were taken from all these excluded children twice weekly and 33 more of these children developed as carriers, making a total of 126 "carriers." Note that the extra 33 were among the brothers and sisters of the original

93 "carriers." The scholars who had shown negative results at the first examination were allowed to continue at school and were not again swabbed. In all there were 163 pupils excluded from school, of whom 126 were "carriers" at one time or another during the two months from February 10 to April 10. It is interesting to note that the 126 "carriers" represented 83 different families, distributed fairly evenly throughout the entire school district, no section being more affected than another. The percentage of nationalities did not vary from the same percentage of nationalities in school attendance, viz: about one-third American, one-third Portuguese and one-third Germans, Danes, etc. The distribution of the "carriers" in the school grades was of about the same ratio, though the Eighth Grade had the highest percentage, about 50% of the class being absent at one time. It is worthy of more than passing note to mention that during this period there were seven cases of diphtheria, six were pupils who had given negative results at the original swabbing and were therefore attending school at the time they were taken sick. The other case was that of a mother of a scholar who was a "carrier." Of the seven cases three died, medical attention not having been sought until the children were practically moribund.

With the exclusion of the children from school no special treatment was ordered, nor was any special care given so far as can be ascertained, except in one or two cases.

The following table shows the percentage of "carriers" persisting during the two months:

Total number of children examined—690.

Feb. 10-13.....	126	"carriers"....	about 18	%
Feb. 18.....	79	" "	11.5	%
Feb. 29.....	62	" "	9	%
Mch. 10.....	45	" "	6.5	%
Mch. 17.....	33	" "	5	%
Mch. 23.....	23	" "	3.25	%
Mch. 31.....	15	" "	2.25	%
April 10.....	12	" "	1.75	%

On April 10th the school trustees ordered all children re-admitted to school. No further diphtheria developed until July—during vacation time of school, when three children in one family who had all been "carriers" and consequently excluded from school during the investigation and were among those ordered to be re-admitted, became victims.

SUGGESTED IMPROVEMENTS IN OUR METHODS OF CONTROLLING THE COMMON CONTAGIOUS DISEASES.*

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In presenting this paper to you I will be guilty of much use of the first personal pronoun. When I say I, I mean I for I do not expect any other than myself to be held responsible for the views expressed herein. I do not wish you, however, to consider them original. As a matter of

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